APPENDIX 7-B

SUGGESTED OUTLINE OF A QUALITY ASSURANCE PROJECT PLAN

This outline is recommended for use by UST consultants/contractors in preparing a generic Quality Assurance Project Plan (QAPP) for use at all sites they may work on. It is also recommended for use when developing site-specific QAPP for particularly complex sites or for sites where a QAPP is specifically requested by the DOH UST Section.

I. TITLE PAGE

At the bottom of the title page, provide signature blocks for approval of the Quality QAPP. If the owner or operator of the underground storage tank has a designated head of environmental matters, then that person should approve of the QAPP. If the owner or operator has hired an environmental consultant or contractor for the investigative or sampling event, then the consultant's or contractor's project manager and quality assurance manager should approve of the QAPP. If a subcontractor is also used, then the approval of the subcontractor's project manager and quality assurance manager should also be obtained. Finally, the director of the designated laboratory should approve of the QAPP.

II. TABLE OF CONTENTS

Include the following sections in the Table of Contents:

A. Introduction and Project Description

B. Project Organization and Responsibilities

C. Quality Assurance Objectives for Data Measurements

D. Sampling Procedures

E. Sample and Document Custody Procedures

F. Calibration Procedures and Frequency

G. Sample Preparation and Analytical Procedures

H. Data Reduction and Validation

I. Internal Quality Control Checks

J. Performance and Systems Audits

K. Preventative Maintenance

L. Data Measurement Assessment Procedures

M. Corrective Actions

N. Quality Assurance Reports to Management

O. List of Appendices

III. INTRODUCTION AND PROJECT DESCRIPTION

The introduction to the project description section should consist of a general paragraph identifying the phase of the work and the general objectives of the investigation.

In describing the investigative project, include a description of the location, size, and important physical features of the site, such as ponds, lagoons, streams, and roads. Include a drawing showing site location and layout. Provide a chronological site history including descriptions of the use of the site, complaints by neighbors, sconstruction and environmental permits, and chemical usage. Also provide a brief summary of previous investigative or sampling efforts and an overview of the results. Finally, list specific project objectives for this particular phase of data gathering, and identify ways in which the data will be used to address each of the objectives. Identify matrix groups and parameters of interest.

IV. PROJECT ORGANIZATION AND RESPONSIBILITIES

Identify key personnel or organizations that are necessary for each activity during the sampling event. Provide a description of responsibilities for each. Include a table or a chart which shows the organization and line of authority for decision-making. Where specific personnel cannot yet be identified, list the job title and the representative organization charged with that responsibility.

V. QUALITY ASSURANCE OBJECTIVES FOR DATA MEASUREMENTS

For individual matrix groups and parameters, implement a multiple-party cooperative effort to include the owner/operator of the underground tank, the consultant/contractor, subcontractors, and representatives of the designated laboratory in order to define what levels of quality are required for the data (data quality objectives). These quality assurance (QA)

objectives will be based on a common understanding of the intended use of the data, available laboratory procedures, available resources, and logistical

limitations (if any). Itemize the field blanks and duplicate field sample aliquots to be collected for QA purposes for the matrix groups identified in the project description.

The selection of analytical methods require a familiarity with regulatory or legal requirements concerning data usage. Provide descriptions of any sample preparation and analytical methods to be used. These may be appended to this QAPP document. If particular standard testing methods are preferred by the Department of Health and those methods are deemed to be appropriate and planned to be used, then these methods can simply be referenced.

Review the detection limits needed for the project as compared to the detection limits of methods offered by the designated laboratory. (Pay special attention to detection limits provided by the laboratory for volatile organic compounds because these limits are often found to be insufficient for the analysis of water for drinking water standards or other requirements.)

Establish quantitative limits for the following QA objectives:

A. Level of QA effort

B. Accuracy of spikes, reference compounds, etc.

C. Precision

D. Method detection limits

While planning for the sampling event, take into consideration the quality characteristics of completeness, representativeness, and comparability. Laboratories should provide data that meet quality control acceptance criteria for 90 percent or more of the requested determinations. Identify any sample types, such as control or background locations, that require a higher degree of completeness. Representativeness of the data is most often thought of in terms of collection of representative samples or selection of representative sample aliquots during laboratory analysis. Comparability is a consideration during the planning stage to avoid having to use data gathered by different organizations or among different analytical methods that cannot be reasonably compared because of differences in sampling conditions, sampling procedures, etc.

VI. SAMPLING PROCEDURES

These procedures may be appended to the site-specific Sampling Plan. Documentation for field measurements or test procedures for hydrogeological investigations should be located in either the Sampling Plan or the "Sample Preparation and Analytical Procedures" section of the QAPP.

Provide a description of the sampling procedures to be used for each major measurement, including pollutant measurement systems. Where applicable, the following items should be included:

A. A description of techniques or guidelines used to select sampling sites

B. A description of the specific sampling procedures to be used

C. Charts, flow diagrams, or tables delineating sampling program operations

D. A description of containers, procedures, reagents, etc. used for sample collection, preservation, transport, and storage

E. A discussion of special conditions for the preparation of sampling equipment and containers to avoid sample contamination

F. A description of sample preservation methods

G. A discussion of the time considerations for shipping samples promptly to the laboratory (i.e., holding times)

H. Examples of the custody or chain-of-custody procedures and forms

I. A description of the forms, notebooks, and procedures to be used to record sample history, sampling conditions, and analyses to be performed

Data quality objectives may be incorporated by reference in this section. Also append any specific field operation methods or procedures which may be routinely used.

VII. SAMPLE AND DOCUMENT CUSTODY PROCEDURES

Sample custody is part of any good laboratory or field operation. If sampling data are needed to demonstrate compliance with specific

requirements or if the data may be used for legal purposes, then use chain-of-custody procedures. The topic of custody may be divided into three basic areas:

A. Sample collection

B. Laboratory

C. Final evidence files

Address all three areas of custody in the QAPP. The owner/operator or the environmental consultant/contractor may refer to other guidance documents for additional information on this topic, such as EPA's "CLP User's Guide." Include all originals of laboratory reports in the final evidence files. Maintain these files under custody.

A sample or an evidence file is under custody if:

A. It is in your possession;

B. It is in your view, after being in your possession;

C. It was in your possession and you placed it in a secure area; and

D. It is in a designated secure area.

Provide examples of chain-of-custody records or forms to be used to record the chain of custody for samples, laboratories, and evidence files.

VIII. CALIBRATION PROCEDURES AND FREQUENCY

Identify calibration procedures and frequency for each parameter measured and include field and laboratory testing. The appropriate standard operating procedures (SOP) can be appended and referenced, or a written description of the calibration procedures to be used must be provided.

IX. SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

For each measurement, either append and reference the applicable analytical SOP or provide a written description of sample preparation and analytical procedures. Standard EPA test methods are preferred, and simple references to them are sufficient.

X. DATA REDUCTION AND VALIDATION

For each measurement, describe the data reduction scheme planned for the collected data, including all equations used to calculate the concentration or value of the measured parameter. Specify the criteria that will be used to validate the integrity of the data during collection and reporting. For

additional information on data validation, refer to EPA's documents entitled "Functional Guidelines for Evaluating Organic Analyses" (EPA 68-01-6699) or "Functional Guidelines for Evaluating Inorganic Analyses."

XI. INTERNAL QUALITY CONTROL CHECKS

Identify all specific internal quality control methods to be used. These methods include the use of replicates, spike samples, split samples, blanks, standards, and QC samples. Identify the ways in which the quality control information will be used to qualify the field data.

XII. PERFORMANCE AND SYSTEMS AUDITS

Describe the internal and external performance and systems audits that will be implemented to monitor the capability and performance of the total measurement system. Additional information on this topic may be found in EPA's "Compendium of Superfund Field Operations Methods" for routine field work.

The systems audits consist of evaluating the components of the measurement systems to determine their proper selection and use. These audits include a careful evaluation of both field and laboratory quality control procedures and are normally performed before or shortly after systems are operational. However, such audits should be performed on a regular schedule over the duration of an investigation or over continuing periods of operation. (Formal laboratory certification programs require onsite systems audit.)

After systems are operational and are generating data, performance audits are conducted periodically to determine the accuracy of the total measurement system or its component parts. Include a schedule for conducting performance audits for each measurement parameter.

XIII. PREVENTATIVE MAINTENANCE

Provide a schedule of the major preventative maintenance tasks that will be carried out to minimize downtime of field and laboratory instruments and equipment. References can be made to owner's manuals for specific field equipment.

XIV. DATA MEASUREMENT ASSESSMENT PROCEDURES

This section describes specific routine procedures which will be used to assess data (i.e., to assess data for precision, accuracy, and completeness). The precision and accuracy of data must be routinely assessed for all environmental monitoring and measurement data. Describe specific procedures to be employed to accomplish this assessment. If enough data are generated, statistical procedures may be used to assess the precision, accuracy, and completeness. If statistical procedures are used, they must be documented.

XV. CORRECTIVE ACTIONS

In the context of quality assurance, corrective actions are procedures that might be implemented with respect to samples that do not meet QA specifications. Corrective actions are usually addressed on a case-by-case basis for a specific investigation. The need for corrective actions is based on predetermined limits of acceptability. Corrective actions may include resampling or reanalysis of samples and recommending an audit of laboratory procedures. Identify persons responsible for initiating these actions, procedures for identifying and documenting corrective actions, and reporting and followup procedures.

XVI. QUALITY ASSURANCE REPORTS TO MANAGEMENT

Identify the method to be used to report the performance of measurement systems and data quality. In these reports, include results of performance audits, results of systems audits, and significant QA problems encountered, along with recommended solutions. The final report for each investigation must include a separate QA section that summarizes the data quality information contained in periodic reports.